Environmental Assessment

Project to Construct a New Fire Cache

Summary

Wind Cave National Park is proposing the construction of a new structure to house the fire cache materials and administrative space for a seven person fire suppression crew. The fire cache provides gear for the park's seven person fire suppression crew and engines, as well as approximately thirty additional red-carded park employees. The cache also provides the necessary equipment for the suppression of wildfires and the implementation of prescribed burns within the park and neighboring land management agencies.

The current structure houses two type VI wildland fire engines, a type III water tender, 30-person fire cache, shop, fire tools, and limited administrative space for the park fire operations. The existing space is inadequate to house the necessary equipment and personnel needed for wildland fire protection for the park. The proposed structure would provide adequate work space and storage for the fire cache.

This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations (CFR) 1508.0). It analyzes the proposed action and alternatives, and their likely impacts on the environment.

Less than 0.1 acres adjacent to the existing structure would be disturbed for the project, with all of this area previously disturbed by the construction of the current fire cache, Building #17, or by the construction for its current use, that of outdoor storage. No cultural resources would be adversely impacted by the proposed actions. The severity, duration and timing of impacts associated with this proposal, and their direct, indirect and cumulative effects do not constitute impairment of park resources and values.

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below or email comments to: wica_planning@nps.gov. This environmental assessment will be on public review for 30 days. Please note that names and addresses of people who comment become part of the public record. **If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Superintendent
Wind Cave National Park
RR 1, Box 190
Hot Springs, SD 57747-9430

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1. PURPOSE AND NEED

1.1 Purpose

Wind Cave National Park was established in 1903 to protect Wind Cave. Since the original designation, the purpose of the park has been expanded from cave preservation alone to protection of both surface and subsurface resources. The primary features of the park are the cave, recognized worldwide as a significant site, and the surface ecosystem which supports plains and hills grasslands and forests, as well as a wide variety of wildlife, including bison, elk, and prairie dogs.

The National Park Service (NPS) is considering building a new structure to house the fire cache and personnel needed for wildland fire protection for Wind Cave National Park, South Dakota. The purposes of the overall project are 1) to adhere to the existing zoning in the park as set forth in the Park's General Management Plan and establish the building within one of the development zones; 2) to have the fire cache in a single location near existing park facilities such as fuel, fire engines, and maintenance staff and equipment to shorten the emergency response time; 3) properly house and care for equipment and materials required for wildland firefighting; 4) to reduce safety hazards for personnel working in crowded and cramped conditions; and 5) to minimize impacts to park visitors due to daily fire activities and emergency response. The funding for this project will come from National Park Service Fire-Pro funding. An Environmental Assessment (EA) analyzes the proposed action and alternatives, and their impacts on the environment. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations (CFR) 1508.0).

1.2 Need

National Park Service Director's Order 18 states: "National Park Service wildland fire management activities are essential to the protection of human life, personal property and irreplaceable natural and cultural resources, and to the accomplishment of the NPS mission. High safety risks and expenses associated with fire management activities require exceptional skill and attention to detail when planning and implementing fire management activities." (NPS 2002a).

Current storage for park fire equipment allows little more than simple storage. The structure for housing the fire equipment was built in 1939. The lower story, where the fire cache is now, consists of five bays that were originally constructed for parking of vehicles, but have been utilized for other purposes, such as coal storage, furnace rooms, and the park carpentry shop.

In 1974, park fire operations were moved into three of these bays, with one housing the park structure fire engine (which the park no longer has), one utilized as a shop, and the third bay used to store gear. In 1996, the two remaining bays were also designated for fire operation use. The current use includes one type III water tender, two type VI fire engines, a 30-person fire cache, shop, fire tools, a work space for a seven person fire suppression crew, and administrative space for the park wildfire operations. The cache contains gear such as fire-line packs, helmets, tents, fire clothing, pumps, chainsaws, and tools needed for both the seven person fire suppression crew and the park's thirty red-carded employees for the suppression of wildfires and implementation of prescribed burns on park and sister agency lands. An additional pickup truck is parked outside the building, adjacent to the fire cache garage door, on a concrete ramp.

The current building was included on the National Register of Historic Places in 1995. During the fire season, the fire crew frequently must move equipment outdoors to work due to lack of space within the building. The fire cache is confined to a single bay, with storage in lofts and overhead areas that pose continuous unsafe working conditions.

Administrative space, including communication for dispatching, is limited to a single desk, telephone, and computer.

The park needs a structure to house the 30-person fire cache which supports the seven person fire suppression crew, as well as the rest of the red-carded employees of the park. This structure would not only provide workspace for the fire suppression crew, but would also house the cache and serve as administrative workspace for park wildfire operations. This facility would better facilitate fire operations and serve the park and surrounding area in rapid response and deployment to wildfire situations.

In addition, any structure constructed must blend with the existing structures in the park to reduce the impacts of a new building on the cultural landscape.

1.3 Background

1.3.1 Park Purposes and Significance

Wind Cave National Park was established in January 1903 (32 Statute 765) as a 10,532-acre area to protect Wind Cave and the underground resources of this unique site. It was the seventh national park and the first one created to protect a cave. The original legislation applied only to the cave and surface developments needed to manage and care for the cave (NPS 1994a).

The purpose of Wind Cave National Park has evolved from cave preservation to protection of both subsurface and surface ecosystems. In 1912, establishment of the Wind Cave National Game Preserve provided a permanent range for bison and "such other native American game animals as may be placed therein." Bison, elk and pronghorn had been extirpated from the area prior to establishment of Wind Cave National Park. Herds of bison and elk were re-established, as the need to preserve and protect big game species was realized. In 1935, management of the game preserve was transferred from the Department of Agriculture, to Wind Cave National Park. In 1946, the park was expanded to over 28,000 acres to maintain a viable population of a variety of big game, especially pronghorn (NPS 1994a).

1.3.2 Description of Project Area

Wind Cave National Park is located in western South Dakota, on the southern edge of the Black Hills. The park encompasses 28,295 acres of prairie ecosystem, underlain by one of the world's longest caves. Wind Cave is estimated to be 40 to 60 million years old, and is well known for its outstanding display of boxwork, an unusual cave feature composed of thin blades of calcite that resemble honeycomb. In addition, the park has over 20 other smaller caves (NPS 1994a).

The gently rolling landscape of the park is a transition zone between plains and mountains, and supports a great diversity of plant and animal species (NPS 1994a). The surface features of the park include expanses of mixed-grass prairie, ponderosa pine and riparian ecosystems. The

park is well-known for the resident bison herd, as well as for opportunities to view mule deer, pronghorn, elk, prairie dogs, birds and a wide variety of small mammals.

The cultural resources of Wind Cave National Park include archeological evidence of Plains Indian cultures, settlement, ranching, and properties listed on the National Register of Historic Places associated with early cave exploration and tourism, and Civilian Conservation Corps.

The park entrance is seven miles north of Hot Springs, SD and is bounded by Custer State Park on the north, Black Hills National Forest on the west, and by private property on the south and east. The park is one of a variety of destinations for Black Hills visitors. Attractions in the immediate area include Mount Rushmore National Memorial, Jewel Cave National Monument, Crazy Horse Memorial, the Mammoth Site in Hot Springs, and Badlands National Park (see Figure 1).

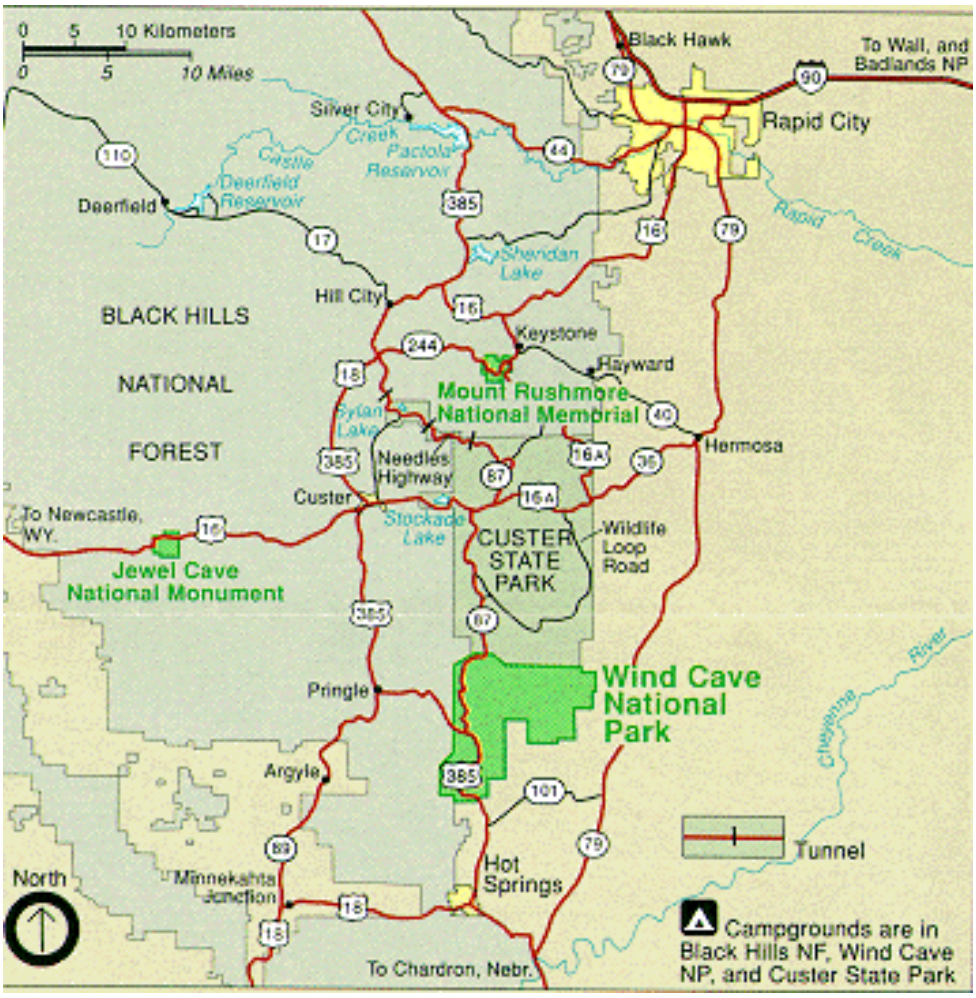

Figure 1. Map of Wind Cave National Park Area.

The proposed actions analyzed in this assessment would take place at a single site. The proposed site is located in Wind Cave Canyon (Figures 2 and 3). Prior to the initial construction of buildings in the area, the site was dominated by the mixed grass system of the native prairie.

Under Alternative B (the Preferred Alternative), construction of a new fire cache would be located on land that has been previously disturbed by the construction of the current fire cache, Building #17, and then by construction of the existing fire cache's parking area. The site is covered by gravel and dirt as vehicles and other equipment have been parked there.

This site was selected as it is the only location that adheres to the purposes for this project. First, this site is within the maintenance area of the development zone as described within the General Management Plan. Second, this location is adjacent to the existing park facilities, including maintenance structures, fuel pumps, and next to the existing building housing the fire engines and equipment. This location also provides a central location for emergency response of park staff. Third, although this site is located within the development zone of the park it is in a location that encounters with the visiting public are rare. The area can be seen from Highway 87, but public access is not readily available.

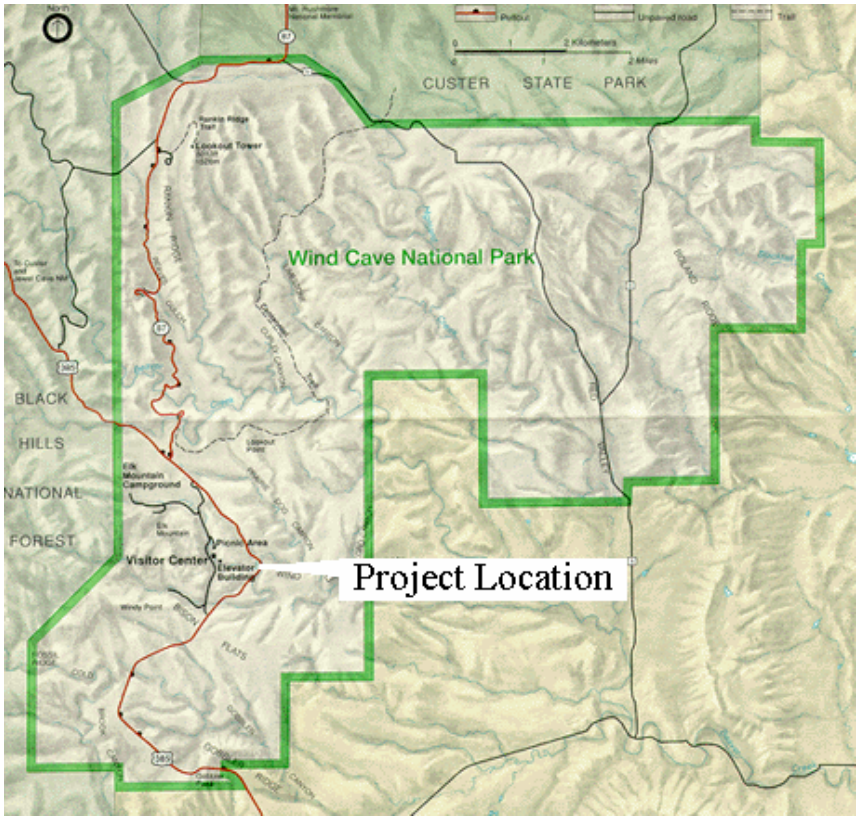

Figure 2. Park and Project Vicinity Map.

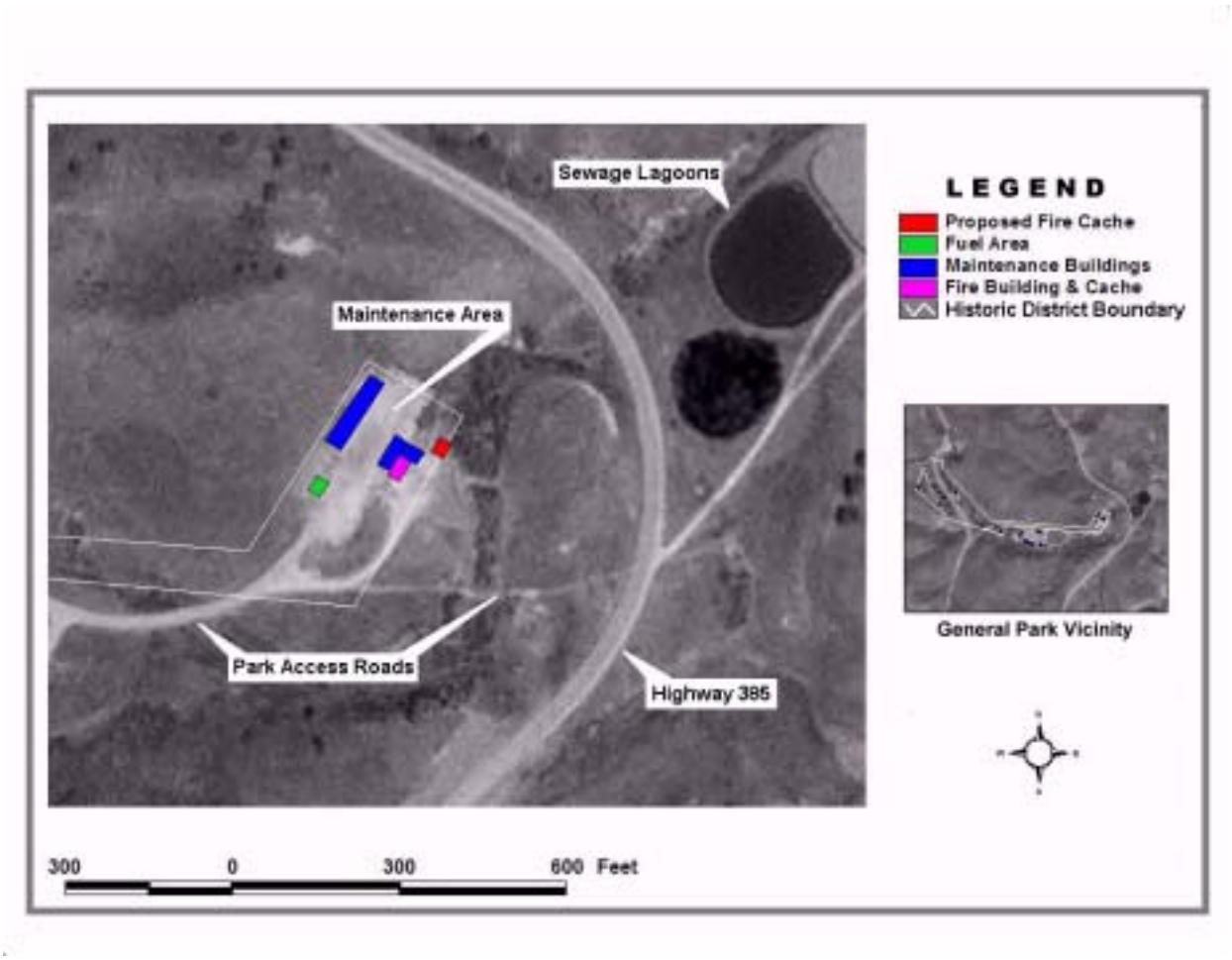

Figure 3. Map of Project Location.

1.3.3 Project Background and Scope

This project is proposed in order to resolve the problems outlined in 1.2 under Need, and provide for future demands of wildland firefighting. This EA has been developed to assess the impacts of proposed actions and alternatives.

1.3.4 Relationship to Other Planning Documents

The *1994 Final General Management Plan/Environmental Impact Statement* and the *1994 Wind Cave Resource Management Plan* outline the direction for proposed actions to protect park resources and enhance visitor experiences at the park. Fire readiness and response have the potential to affect adjacent lands and sister agencies within the southern Black Hills. Specific plans that relate to the actions proposed in this environmental assessment are summarized in Table 1.

The project to construct a fire cache structure represents a continued commitment to be proactive in fire and fire management capabilities. The proposed action alternatives would not conflict with any ongoing or planned management activities within the park. Fire preparedness furthers the objective of long-term protection and sustainable management of vital park resources.

Table 1: Project's Relationship to Other Plans

Management Activity	Relationship to Proposed Action
Develop a comprehensive vegetation management plan and accompanying compliance documentation (NPS 1994a). This project is currently underway.	Disturbance in the park has led to increased presence of weeds in the developed area. After construction of the fire cache, park staff would likely need to implement weed control measures to ensure regrowth of native vegetation around the structure.
Replacement of the failing wastewater treatment facility (NPS 2003). This project is currently underway.	The park's sewage treatment lagoons are adjacent to this project area, but on the east side of Highway 385. This project would have no water or sewer hookups and therefore would have no effect on water quality or sewage

1.3.5 Public Scoping

On December 2, 2003, an internal scoping meeting for affiliated American Indian tribes, neighboring structural fire brigades, and the local power company was held at Wind Cave National Park. During this meeting, alternatives addressing the park fire cache issue were discussed. An example of the scoping letters is found in Appendix A. A press release outlining the proposed project and requesting public comment was sent out on November 21 and printed in the Hot Springs Star. It was also posted to the park's website on November 21. No comments were received other than those taken during the internal scoping meeting.

1.4 Issues and Impact Topics

1.4.1 Issues and Impacts Addressed

Impact topics were used to focus the evaluation of the potential consequences of the proposed action and no action alternative. Impact topics were identified based on legislative requirements, topics specified in *Director's Order #12 and Handbook* (NPS 2001b), and park-specific resource information. The impact topics for the project to construct a fire cache at Wind Cave National Park are presented in Table 2. The rationale for dismissing topics is found in section 1.4.2.

1.4.1.1 Cave Resources

Under the regulations of the Federal Cave Resources Protection Act of 1988, 43 CFR Part 37 Cave Management, *NPS Management Policies 2001* (NPS 2001a), all parks with cave resources will evaluate the affect of projects on caves. Therefore, cave resources are addressed as an impact topic in this EA.

1.4.1.2 Cultural Resources

Impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of the CEQ (CEQ 1978) that implement the National Environmental Policy Act. These impact analyses also are intended to comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act. In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties), impacts to cultural resources were identified and evaluated by:

1) Determining the area of potential effects;
2) Identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places;
3) Applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and
4) Considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the National Register. For example, this could include diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternative that would occur later in time, be farther removed in distance, or be cumulative (36 CFR Part 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

Council on Environmental Quality regulations (CEQ 1978) and *Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001b) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the intensity of an impact from major to moderate or minor. Any resulting reduction in intensity of impact because of mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined

by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis for cultural resources. The summary is intended to meet the requirements of Section 106 and is an assessment of the effect of implementing the alternative on cultural resources, based on the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

1.4.1.3 Public Health and Safety

Both alternatives have the ability to affect public health and safety, therefore, public health and safety is addressed as an impact topic in this EA.

1.4.1.4 Soils

Soils in the Project Area would be disturbed as a result of the action alternatives. Therefore, soils are addressed as an impact topic in this EA.

1.4.1.5 Vegetation

Vegetation in the project areas would be disturbed as a result of the action alternatives. Therefore, vegetation is addressed as an impact topic in this EA.

1.4.1.6 Visitor Use and Experience

Providing for visitor enjoyment is one of the primary purposes of the NPS, according to the 1916 Organic Act. Alternatives presented in this EA have the potential to affect visitor use and experience. Therefore, visitor use and experience is addressed as an impact topic in this EA.

1.4.2 Impact Topics Dismissed From Detailed Analysis

The rationale for dismissing specific topics from further consideration is given below:

1.4.2.1 Air Quality including Night Sky

Wind Cave National Park is designated as a class I clean air area under the Clean Air Act (42 USC 7401, et seq. Maximum allowed increases (increments) of sulfur dioxide (SO2), particulate matter (TSP-total suspended particulates), and nitrogen oxides (NOx) beyond baseline concentrations of those pollutants cannot be exceeded at the park. These increments allow modest industrial growth in the vicinity of class I areas. The proposed alternatives would have no measurable effect on the overall air quality of the park.

The NPS Night Sky Initiative and *NPS Management Policies 2001* (NPS 2001a) direct the park service to "preserve to the greatest extent possible, the natural lightscapes of parks, which are natural resources and values that exist in the absence of human-caused light." The park service is currently developing the Night Sky Initiative to formulate a policy to protect views of the stars and planets in our national parks. To meet this directive, overnight lighting shall not be used. The actions proposed in this analysis would restrict the use of lighting to those areas where security and safety are required. Low-impact techniques would be utilized and shields would be installed to prevent degradation of the night sky view and avoid disruption of the physiological

processes of plants and animals. Both alternatives would not be likely to affect appreciation of the night sky or interfere with activities of nocturnal creatures. For these reasons, night sky is dismissed as an impact topic for further consideration.

1.4.2.2 Ecologically critical areas

Wind Cave National Park does not contain any designated ecologically critical areas, wild and scenic rivers, or other unique natural resources, as described in the Wild and Scenic Rivers Act, 36 CFR 62 criteria for national natural landmarks, or *NPS Management Policies 2001* (NPS 2001a).

1.4.2.3 Environmental Justice

Executive Order 12898, General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The alternatives would not have any health or environmental effects on minorities or low-income populations or communities as defined in the CEQ *Environmental Justice Guidance Under the National Environmental Policy Act* (CEQ 1997). Therefore, environmental justice is dismissed as an impact topic in this EA.

1.4.2.4 Housing

Due to the proposed project, a temporary influx of workers would occur in the area. Workers would need to stay in either campgrounds or housing in the local areas. Because of the short duration of the project, housing is dismissed as an impact topic from this EA.

1.4.2.5 Indian trust resources

Indian trust assets are owned by Native Americans but held in trust by the United States. Requirements are included in the Secretary of the Interior's Secretarial Order No. 3206, "American Indian Tribal Rites, Federal – Tribal Trust Responsibilities, and the Endangered Species Act," and Secretarial Order No. 3175, "Departmental Responsibilities for Indian Trust Resources." No Indian trust assets occur within Wind Cave National Park.

1.4.2.6 Land Use

Land uses within the Project Area would remain the same following implementation of any of the alternatives. Therefore, land use is dismissed as an impact topic in this EA.

1.4.2.7 Natural, depletable, or energy resource requirements and conservation potential

As directed by *NPS Management Policies 2001* (NPS 2001a), the park service strives to minimize the short- and long-term environmental impacts of development and other activities through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically responsible materials and techniques. Both of the alternatives require energy for day-to-day operations and the proposed action requires materials for construction. Quantification of the energy required for by the options is not addressed in this assessment. Specific impacts to the cultural and natural environment are addressed by impact topic.

1.4.2.8 Natural Soundscape

The *NPS Management Policies 2001* (NPS 2001a) state that the NPS will strive to preserve the natural quiet and natural sounds associated with the physical and biological resources of parks. Neither of the alternatives addressed in this analysis would introduce long-term, inappropriate noise levels to the park. The proposed actions occur in areas with an existing level of development, including highways, roads, and park facilities. The temporary nature of noise produced during construction activities is appropriate in developed areas, and would not be expected to produce adverse effects on the human or natural environment. No actions are proposed that would introduce long-term noise sources to remote or undeveloped portions of the park, and the proposed action would not alter the baseline, ambient noise level at Wind Cave National Park. Therefore, noise is dismissed as an impact topic in this EA.

1.4.2.9 Park Operations

Operations of the park would remain the same following implementation of any of the alternatives. Therefore, park operations are dismissed as an impact topic in this EA.

1.4.2.10 Prime and Unique Farmlands

Prime farmland, as defined by the Council on Environmental Quality 1980 memorandum, has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique agricultural land is land other than prime farmland that is used for production of specific high-value food and fiber crops. These designations are established by the Natural Resource Conservation Service following soil and resource analyses. No lands within Wind Cave National Park have been defined as prime or unique agricultural lands.

1.4.2.11 Socioeconomic Environment

Socioeconomic values consist of local and regional businesses and residents, and local and regional economy. The local and regional economies of this area are strongly influenced by tourism. Should the proposed actions be implemented, short-term economic benefits from project-related expenditures and employment would include economic gains for some local businesses and individuals. Possible inconvenience to park visitors from construction activities would be temporary, affect few in number, and occur only during the construction period. While there may be slight short-term benefits to local economies, local and regional businesses would not be appreciably affected in the long term. Therefore, socioeconomic values are dismissed as an impact topic in this EA.

1.4.2.12 Wetlands and Floodplains

The proposed project area within Wind Cave National Park does not contain any designated or functional wetlands as described in Executive Order 11990, the Clean Water Act Section 404, or by NPS Director's Order #77-1 (NPS 1993). The area the alternatives also lie outside the 100 and 500-year designated floodplains for the perennial streams of Wind Cave National Park, Custer County, and is not subject to management under Executive Order 11988 or the Clean Water Act.

1.4.2.13 Wilderness

Wind Cave National Park does not contain nor is it adjacent to any designated or proposed wilderness areas. Approximately 96.5 percent of the park's surface is included in the "natural zone" (NPS 1994a). Within this area, signs of human use and development are widely present and easily visible. Highway 385 transects the park, and is traveled by over one million people each year. Wind Cave National Park is not under consideration for wilderness designation under the 1964 Wilderness Act, Director's Order 41 (NPS 1999), or *NPS Management Policies 2001* (NPS 2001a).

1.4.2.14 Wildlife including Special Status Species and Designated Critical Habitats

The 1973 Endangered Species Act, as amended, requires an examination of impacts to all federally listed threatened or endangered species. NPS policy requires examination of the impacts to state listed threatened or endangered species and federal candidate species. The park project to construct a new fire cache structure examined threatened, endangered and state sensitive species. Both alternatives would have no effect on the American burying beetle, bald eagle, or black-tailed prairie dog as these species do not occur in the project area. The state sensitive plant species, Hopi Tea, also does not occur in the project area. Therefore, impacts to special status species is dismissed as an impact topic in this EA.

1.4.3 Impairment of Park Resources or Values

National Park Service policy, (NPS 2002b) requires analysis of potential effects to determine whether or not actions would impair park resources.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values.

However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources. Additionally, a determination involving the environmental consequences of the proposed action, resources and values must be considered. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute an impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

1) Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
2) Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park;
3) Identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. This environmental assessment will analyze the potential effects of all alternatives presented to determine if the alternative would result in an impairment of park resources. An impairment finding is included in the conclusion section for each impact topic.

1.4.4 Sustainability and Long-term Management

Sustainability and long-term management are key issues for both alternatives, therefore this topic is addressed, but not as an impact topic in this EA.

2. PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative Comparison

2.1.1 Alternative A, No Action

Under Alternative A, No Action, use of current facilities would remain the same for the one type III water tender, two type VI fire engines, 30-person fire cache, shop, fire tools, work space for a seven person fire suppression crew, and administrative space for the park wildfire operations.

The additional fire pickup truck will continue to be parked outside and adjacent to the fire cache garage door on a concrete ramp. During periods of precipitation, oil, gas and other fluids potentially leaking onto the concrete will be washed off onto surrounding soil and enter potential water tables and cave resources.

During the fire season, the fire crew will continue to move equipment outdoors to work due to lack of space within the building. The fire cache will remain confined to a single bay, with storage in lofts and overhead areas that pose continuous unsafe working conditions.

Administrative space, including communication for dispatching, will remain limited to a single desk, telephone, and computer.

2.1.2 Alternative B, Preferred Alternative

Under Alternative B (Preferred Alternative), the NPS would construct a structure to house the fire cache and provide office space for the park fire staff. The structure would provide approximately 700 square feet of space with outside dimensions of approximately 20 feet by 30 feet. The structure would be constructed in a manner so as to match the appearance of the existing structures to maintain a uniformity of design and style. This would be completed by matching roof pitches and roofing styles. The exterior of the structure would be covered with synthetic stucco similar in appearance, texture and color to the exterior of the existing buildings. In addition, the garage doors on the historic buildings are considered a significant contributing element to their architecture. The garage doors on the proposed structure will be matched in design and appearance so as to blend uniformly with the historic nature of the area. Electrical and telephone lines would be installed with lines either trenched from the adjacent building or a nearby power pole. The telephone line would come from the adjacent building and be trenched in previously disturbed ground. The preferred power source would also be from the adjacent building and the line placed in the same trench. If the building does not have sufficient power, then the line would be trenched from an existing power pole, approximately 100 feet to the northeast of the proposed site.

The current structure would continue to house the two type VI wildland fire engines, the type III water tender, fire tools and shop, but would also have room to park the fire pickup within the bay where the fire cache is now, providing a buffer from inclement weather washing vehicle fluids into potential water tables and cave resources.

Less than 0.1 acres adjacent to the existing structure would be disturbed for the project, with all of this area having been previously disturbed by the construction of the current fire cache, Building #17, and then by construction of the existing fire cache's parking area. The site is covered by gravel and dirt as vehicles and other equipment have been parked there. (See pictures in Appendix D.) The proposed structure would be built on a concrete pad.

Table 2: Comparative Summary of Alternatives and Extent to Which Each Alternative Meets the Project Objectives		
Alternative	**Action**	**Meets Project Objectives?**
Alternative A, No Action	Fire cache equipment would continue in existing storage bay; space would continue to necessitate high overhead storage and access would continue to be unsafe; administrative and work space would remain as at present.	Meets objectives to stay within existing park zoning and maintain fire cache within a single location near existing park facilities. Meets objectives of housing equipment, but does not provide for long-term care of fire cache materials or reducing safety hazards for personnel working in the fire cache. Meets objective to minimize impacts to park visitors with regards to fire activities.
Alternative B, Preferred Alternative	A structure would be built adjacent to the existing fire bays to house the fire cache and administrative work space for fire personnel.	Meets objectives to stay within existing park zoning and maintain fire cache within a single location near existing park facilities. Meets the objectives of storing and long-term care of fire cache materials; meets the objectives of reducing safety hazards for personnel working in the fire cache. Meets objective to minimize impacts to park visitors with regards to fire activities.

2.1.2.1 Impact Mitigation for Alternative B, Preferred Alternative

To reduce the overall visual impact, mitigation will consist of constructing the proposed structure in a manner so as to match the appearance of the existing structures to maintain a uniformity of design and style. This would be completed by matching roof pitches and roofing styles. The exterior of the structure would be covered with synthetic stucco similar in appearance, texture and color to the exterior of the existing buildings. In addition, the garage doors on the historic buildings are considered a significant contributing element to their architecture. The garage doors on the proposed structure will be matched in design and appearance so as to blend uniformly with the historic nature of the area.

To revegetate the area surrounding the proposed structure, a native seed mix appropriate to the local plants will be used for revegetation. If necessary, plugs or entire plants will be used to supplement seeding. Additional mitigation includes removal of all petroleum products, spoil materials, debris, and exotic broadleaf species after construction is completed

2.2 Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the CEQ. The CEQ provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy" as expressed in NEPA's Section 101b:

1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2) Ensure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3) Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4) Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5) Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In the National Park Service, the no action alternative may be considered in identifying the environmentally preferred alternative.

As examined, both alternatives present no substantive differences in impact on cultural, soil, or vegetative resources.

Alternative B provides for increased protection to cave resources by allowing a vehicle currently parked outdoors to be parked within the current structure, thus minimizing the potential for fluids that may leak from it to reach potential ground water and cave resources.

Alternative B provides for public health and safety by providing adequate storage of fire cache materials and adequate space to prepare for, respond to, and deploy to wildland fire situations in a safe and effective manner.

Alternative B will also enhance visitor experience by improving the physical appearance of the fire cache area by eliminating the parking area and providing a structure that mimics the appearance of the CCC buildings of the maintenance area.

In addition, Alternative B presents a wider range of solutions to the park's fire cache and fire administrative needs and would produce the most sustainable, long-term option for fire management.

Therefore, Alternative B, the Preferred Alternative, would be the environmentally preferred alternative.

2.3 Alternatives Considered But Dismissed

Storage of fire cache materials in other park buildings.

This alternative was considered and dismissed since two of the purposes of this project were to have a fire cache in a single location and minimize impacts to park visitors due to emergency responses. This alternative would distribute fire cache materials to various locations and would mean that persons responding to incidents would have to respond to the present structure to retrieve vehicles and then drive to other locations for fire cache equipment. In doing this, response may create impacts to park visitors.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter discusses the environmental consequences of implementing the alternatives described in Section 2. This analysis discusses the affected environment, impacts to resources identified as impact topics in Section 1, and provides the scientific and analytical basis for the comparison of the alternatives. A summary chart of impacts and evaluation are presented in Appendix B.

3.1.1 Direct Effects

Effects caused by the action and occurring at the same time and place.

3.1.2 Indirect Effects

Effects caused by the action but occurring later in time or further removed in distance.

3.1.3 Cumulative Effects

Cumulative effects are those effects that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions. Included in the cumulative affects analyses are the effects of current and future activities not included in Alternative B (Preferred Alternative). The current and future activities included in each cumulative effects analysis may vary. Direct, indirect and cumulative effects impact analyses include discussions on adverse and beneficial effects, and short and long-term effects on resources. Following the discussion of the impacts of each alternative on each impact topic, a brief "conclusions" section summarizes all major findings, including whether or not an impairment of resources or values, as defined in Section 1.4, *NPS Management Policies 2001* (NPS 2001a) is likely to or would occur.

3.2 Impact Analysis Topics

3.2.1 Cave Resources

3.2.1.1 Affected Environment

Wind Cave is named for and ventilated by the natural air currents that move through its passageways. Changes in atmospheric pressure cause air to move in or out of the cave. Winds in the entrance area of the cave have been measured in excess of 60 mph (100 kph), some of the strongest barometric cave winds in the world.

The cave is generally dry, containing little standing or flowing water. Several small lakes are found in the deepest point in the cave where the limestone intersects the water table. Several smaller pools of perched water are present in various places throughout the cave and many passages under surface drainages have dripping water.

Current thought is that the cave originated from water seeping down from the surface through porous sediment, water moving horizontally through the aquifer and through upwelling warm water. Most limestone caves throughout the world form when acid-charged surface water makes its way through cracks or joints in limestone. Eventually the water drains out of the

enlarged cracks with the result being a cave. Wind Cave's evolution or speleogenesis is unusual in that the water which dissolved the cave came from three directions, above, sides, and below.

A small portion of Wind Cave has been developed for visitor access. Two artificial openings were created and two elevators were installed. Passages within the cave were enlarged to accommodate placement of concrete walkways, electrical service for lighting, and stairways. A 1.5-mile trail is in place, with 0.8 miles of this length surfaced with concrete (NPS 1994a). The cave currently receives approximately 90,000 visitors annually.

In 1996, dye tracing was used to determine the ability of surface pollutants to reach cave passages. A red fluorescent dye was added to runoff from a simulated 1-inch storm event. The dye reached cave passages in as little as 6 hours, or in as long as one year. At all sites, the dye was persistent, remaining detectable for months to years. The park's cave management philosophy includes the assumption that if dye can be carried into cave waters and passages, pollution can also reach these sites (Davis 1996).

Cave resources that have been lost or damaged since the cave was discovered are not known. Systematic studies of the cave ecosystem were not performed during early explorations. Artificial entrances have altered natural cave air flow patterns. This can change the cave climate and endanger formations and biota. Over 5 million visitors have left particles of lint, fiber, hair and skin in the cave. These particles deposited by visitors accumulate along the cave tour routes, and being predominantly organic material, become an unnatural food source for cave invertebrates. This can alter the species composition and change species ranges. Lint also holds moisture, which can accelerate dissolution of underlying rock (NPS 1994b).

Algal growths are also present in the cave. These unnatural growths are generally associated with lighting provided to illuminate cave formations and with walkway lights. The presence of algae is an aesthetic problem, and it also creates an artificial food source for cave biota and can secrete weak acids that increase rock dissolution (NPS 1994b). Algae contain chlorophyll, and respond to nutrient inputs as plants would.

3.2.1.2 Evaluation Criteria

Direct, Indirect, and Cumulative Impacts (Methodology for Determining Impacts)

The following definitions apply to impact descriptions for the cave resources:

Context: Geographic extent or scope of the impact

Duration: Caves within National Park Areas are managed as non-renewable resources. All effects to cave resources are considered to be long-term and irreversible.

Intensity:

- Negligible – No changes would occur or changes in cave formations and biota would be below or at the level of detection, and if detected, would have effects that would be considered slight.
- Minor – Changes in cave formations and biota may be measurable, although the changes would be minimal, and the effects would be localized. No cave resource protection measures would be necessary.

Moderate – Changes in cave formations and biota would be measurable. Formations would be affected by deterioration, altered chemical composition, or changed depositional patterns. The effects would be localized. Cave resource protection measures would be necessary and the measures would likely be successful.

Major – Changes in cave formations and biota would be measurable, would have substantial consequences, and be noticed throughout the cave system. Cave resource protection measures would be necessary and the success of the measures could not be guaranteed.

3.2.1.3 Impacts of Alternative A, No Action

The potential for water, fuel, or other materials leaking from vehicles parked in the fire building to reach the low energy cave system is the main concern regarding cave resources.

Although no cave passages have been found directly below the current maintenance area, there is a high probability that they exist at this location. The cave was exposed to wastewater prior to lining of sewage collection system. Although no quantified data has been collected, resource specialists note an increase in algae in the cave over the past several years, which could be a result of a combination of cave lighting and nutrient inputs. (Wind Cave National Park, R. Horrocks, personal communication 2003)]. The potential addition of materials leaking from vehicles and finding its way into the cave system due to current fire equipment storage and vehicular parking represents a long-term, localized, moderate, adverse effect on cave resources of the park.

Cumulative effects. Caves are at risk from a variety of human actions. Creating access points can alter air flow and change the overall cave environment, land use above cave resources can alter flow patterns and water quality, and lint and lighting can alter cave species composition. The changes in the cave system that have resulted from these actions are long-term, adverse, and likely of moderate intensity.

Recently, the park has initiated projects to improve water quality and reduce potential impacts to cave resources caused by water pollution. Slip-lining of the wastewater collection piping has reduced the potential for nutrients to enter the cave, and planned improvements to stormwater management at the Visitor Center will reduce effects of parking lot pollution. Continuation of Alternative A (the no action alternative) would make no beneficial contribution to these other park plans to protect cave resources. The cumulative effect of Alternative A would be adverse, and minor.

Conclusion. The potential for water, fuel, and other materials leaking from vehicles in the fire building to periodically reach the cave and affect the ecosystem and cave formations would continue under the no action alternative. This would produce localized, long-term, adverse effects on cave resources of moderate intensity.

The no action alternative would not produce major adverse impacts on cave resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of cave resources or values as a result of continuation of the no action alternative.

3.2.1.4 Impacts of Alternative B (Preferred Alternative)

The potential for water, fuel, or other materials leaking from vehicles parked in the fire building would be minimized as all vehicles would be parked inside and away from a buffer from inclement weather washing vehicle fluids into potential water tables and cave resources. Only the fire cache and office space would be moved to the proposed structure. As there would be no water or sewer to the proposed structure, there would be no potential for leakage of sewage into potential cave resources. The potential of materials leaking from vehicles and finding its way into the cave system due to indoor fire equipment storage and vehicular parking represents a long-term, localized, negligible, adverse effect on cave resources of the park.

Cumulative effects. The changes in the cave system that may resulted from these actions are long-term, adverse, and likely of negligible intensity.

Conclusion. The potential for water, fuel, and other materials leaking from vehicles in the fire building to periodically reach the cave and affect the ecosystem and cave formations would continue under the preferred alternative, but be lessened since an additional vehicle could be parked within the structure. This alternative would produce localized, long-term, adverse effects on cave resources of negligible intensity.

The preferred alternative would not produce major adverse impacts on cave resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of cave resources or values as a result of the implementation of the preferred alternative.

3.2.2 CULTURAL RESOURCES

3.2.2.1 Affected Environment

3.2.2.1.1 Prehistoric Resources

Wind Cave National Park is located between the centers of two prehistoric culture areas: the Middle Missouri River Valley to the east and the High and Northern Plains to the north and west. Early people were attracted to the Black Hills because they offered shelter in the winter, the climate was slightly cooler in the summer than the surrounding country, and good hunting and sources of quality stone for tools were found in the area.

Important types of sites found in and near Wind Cave National Park include prehistoric rock shelters, artifact scatters, kiln sites, lithic reduction sites (tool manufacture), and stone circles.

The earliest archeological sites are assigned to the Early Archaic period between 6,000 and 3,500 B.C. Surveys have located two prehistoric sites in the general vicinity of the project. Site 39CU1194 is a possible quarry and 39CU1195 is a prehistoric artifact scatter. These sites are outside of the area of potential effect (NPS 1998, NPS 2002c).

3.2.2.1.2 Ethnographic Resources

A number of historically recognized tribal groups used the project area before and during the time of Euro-American exploration and settlement. The earliest named inhabitants of the Black

Hills were the Kiowa, later succeeded by the Crow, and then the Ponca tribe. The Dakota Sioux arrived in the Black Hills during the latter part of the 1700s, and the Cheyenne were reportedly in the area in 1804.

A number of Native American tribes have aboriginal, historical, and cultural ties to the land within the Black Hills, which includes Wind Cave. Government agencies representing Tribes with ties to the Park include: Arapaho Business Council, Cheyenne River Sioux Tribe, Cheyenne-Arapaho Tribes of Oklahoma, Crow Creek Sioux Tribe, Crow Tribe, Flandreau Santee Sioux Tribe, Fort Belknap Community Council, Fort Peck Tribal Executive Board, Lower Brule Sioux Tribe, Northern Cheyenne Tribe, Oglala Lakota Nation, Rosebud Sioux Tribe, Santee Sioux Tribe, Shoshone Business Council, Sisseton-Wahpeton Sioux Tribe, Spirit Lake Sioux Tribe, Standing Rock Sioux Tribe, Three Affiliated Tribes, and Yankton Sioux Tribe. The Black Hills occupy a very special place in the history, creation stories, and religious beliefs of these groups.

A study of the history of tribal and European American occupancy of the Black Hills and adjacent areas has just been completed. No ethnographic resources have been specifically identified within the area of potential effect for this project.

3.2.2.1.3 Historic Resources

Historic period sites in the area are primarily related to pre-park homesteading and to Civilian Conservation Corps presence during the 1930s.

Civilian Conservation Corps (CCC) workers began to arrive at Wind Cave in 1934, and a camp was established in the area now occupied by the park's seasonal housing. Many of the improvements in the park were constructed by the CCC. The CCC established the visual character of the park's developed zone with landscaping, stone retaining walls, and the construction of the elevator building.

Seventeen of the park's buildings are included in and contributing to the Administrative and Utility Area Historic District, which is listed on the National Register of Historic Places. The cave entrance/stairs, and miscellaneous landscape features, including the road, trail, rock walls, and culverts are within the district and also contribute to its significance. Buildings added during the 1930s and 1940s are within the historic district. Following their construction, the exterior facades of the existing (earlier) structures were modified and stuccoed to blend with the rustic style of the newer buildings.

The building housing the fire program (Building 17) was built by the CCC in 1939 and lies within the Administrative and Utility Area Historic District and is considered contributing. The building has been modified in the past to serve the current needs. The proposed fire cache structure would be constructed adjacent to Building 17 and would be within the National Register district. However, because the construction proposed is in a style that would resemble or complement the historic architecture this would have no negative impacts on the integrity of the district.

The district is significant under National Register Criterion A for its association with the Civilian Conservation Corps. The buildings also have local significance for their exemplary representation of National Park Service Rustic Architecture in which the materials and design reflect the philosophy of incorporating natural landscape elements into planning and design. The District and its landscape features have been documented as part of the historic and land use

studies (Long 1992, Western History Research 1994), and by completion of the National Register forms.

3.2.2.1.4 Cultural Landscape

The cultural landscape at Wind Cave National Park has been inventoried, but the Cultural Landscape Report is only in the early draft stages. No landscapes have been formally evaluated, but because the current and proposed fire cache structure are physically located within the borders of the National Register District, the associated landscape would then be considered as eligible for the National Register of Historic Places. The historic buildings, parking area, lawns, and ponderosa pine trees, set against the backdrop of the rugged, tree-covered terrain of the adjacent hills and ravines, convey a special sense of place and history to the visitor.

The various features contained within the historic district, including stone walls, curbs, road, trails, and culverts, are contributing features that help define the character of this historic scene. The landscape features are locally significant under Criterion A for their association with the development of the area to protect Wind Cave as an important natural feature, to make this resource more accessible, and to interpret the resource to a visiting public (NPS 1992a).

The landscape features exemplify the NPS philosophy of applying design concepts of rustic architecture to landscaping, and are also locally significant under Criterion C. As a collection of features, the landscaping plays a significant role in Wind Cave Development, and contributes to the historic character of the area (NPS 1992a).

3.2.2.1.5 Previous Archeological Investigations

A search of the park's GIS database was completed in April 2003 to identify previous surveys and sites that might be within the project area. This database is updated with information from the Midwest Archeology Center (MWAC) in Omaha, Nebraska. Staff from MWAC have been involved with archeology surveys and Section 106 clearance projects in the park for several years. No record of previous archeological surveys was located within the project area.

3.2.2.2 Evaluation Criteria

Direct, Indirect, and Cumulative Impacts (Methodology for Determining Impacts)

The following definitions apply to impact descriptions for the cultural resources:

Context: Geographic extent or scope of the impact

Duration:

- Short-term – Effects on the natural elements of a cultural landscape may be comparatively short-term (e.g., three to five years until new vegetation grows or historic plantings are restored, etc.)
- Long-term – Because most cultural resources are non-renewable, any effects on archaeological, historic, or ethnographic resources, and on most elements of a cultural landscape would be long-term.

Intensity:

Negligible – The impact is at the lowest levels of detection – barely perceptible and not measurable.

Minor – For archeological resources, the impact affects an archeological site(s) with modest data potential and no significant ties to a living community's cultural identity. The impact does not affect the character defining features of a National Register of Historic Places eligible or listed structure, district, or cultural landscape.

Moderate – For archeological resources, the impact affects an archeological site(s) with high data potential and no significant ties to a living community's cultural identity. For a National Register eligible or listed structure, district, or cultural landscape, the impact changes a character defining feature(s) of the resource but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.

Major – For archeological resources, the impact affects an archeological site(s) with exceptional data potential or that has significant ties to a living community's cultural identity. For a National Register eligible or listed structure, district, or cultural landscape, the impact changes a character defining feature(s) of the resource, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register.

3.2.2.3 Impacts of Alternative A, No Action

Analysis. Continuation of existing conditions would not have any new impacts on prehistoric or historic archeological resources. Continuation of current management would not affect the historic structures or ethnographic resources within the park. Because there is no construction or excavation associated with this alternative, there would be no effects to unknown resources, and no potential for discovery or new findings.

Cumulative impacts. The park has recently completed water and wastewater piping system upgrades and is planning to replace the Visitor Center parking lot. Regionally, non-renewable cultural sites continue to be affected by development, vandalism, and erosion. Overall, the activities outside of the park, combined with the in-park infrastructure improvements, have the potential for long-term, adverse effects on cultural resources. However, the no action alternative does not include ground disturbance, so it would not contribute to local or regional cumulative effects on cultural resources.

Conclusion. The no action alternative does not require ground disturbance, changes in historic structures or landscapes, or actions that would affect ethnographic resources. Therefore, no impacts to cultural resources would be anticipated from implementation of the no action alternative.

The no action alternative would not produce major adverse impacts on cultural resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other NPS planning documents. Consequently, there would be no impairment of cultural resources or values as a result of the implementation of this alternative.

3.2.2.4 Impacts of Alternative B, the Preferred Alternative

Analysis. Constructing a fire cache structure, would constitute an addition to the cultural and historic fabric of the area. The structure would be designed to mimic the sandstone CCC

buildings of the maintenance area to reduce impact on the cultural and historic fabric of the area. The proposed structure would be constructed in a manner so as to match the appearance of the existing structures to maintain a uniformity of design and style. This would be completed by matching roof pitches and roofing styles. The exterior of the structure would be covered with synthetic stucco similar in appearance, texture and color to the exterior of the existing buildings. In addition, the garage doors on the historic buildings are considered a significant contributing element to their architecture. The garage doors on the proposed structure will be matched in design and appearance so as to blend uniformly with the historic nature of the area. Appendix C contains an elevation drawing for the proposed structure.

The preferred alternative would require excavation of a 25 by 35 foot area, approximately 5 feet deep for the construction of a building foundation, and trenching between the proposed structure and Building 17, or to a power pole to the northeast for power and telephone lines. However, this area has been heavily disturbed by construction of adjacent buildings, parking area, and no *in situ* sites would be expected. No ethnographic sites have been identified within the project area.

Construction of the structure would have a long-term, minor adverse impact on the landscape adjacent to historic building 17.

Cumulative effects. As described for the no action alternative, the park's ongoing improvement programs and regional development projects have the potential to adversely impact cultural resources. However, under the preferred alternative, no known archeological, or ethnographic resources would be affected. Because the construction proposed is in a style that would resemble or complement the historic architecture this would have no negative impacts on the integrity of the district. Adverse impacts to the cultural landscape would be long-term, and minor, and thus would not contribute to long-term cumulative effects.

Conclusion. No new adverse impacts or cumulative impacts on archeological, historical, or ethnographic sites would be anticipated under the preferred alternative. Construction of the fire cache structure would add minor long-term adverse impacts to the landscape.
The preferred alternative would not produce major adverse impacts on cultural resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other NPS planning documents. Consequently, there would be no impairment of cultural resources or values as a result of the implementation of this alternative.

3.2.3 Public Health and Safety

3.2.3.1 Affected Environment

The primary public health and safety concern associated with the existing fire cache is the storage of fire equipment in safe and efficient manners and the working environment to which they are subjected.

3.2.3.2 Evaluation Criteria

Direct, Indirect, and Cumulative Impacts (Methodology for Determining Impacts)

The following definitions apply to impact descriptions for public health and safety:

Context: Geographic extent or scope of the impact

Duration:
- Short-term – Effects lasting for the duration of the treatment action
- Long-term – Effects lasting longer than the duration of the treatment action

Intensity:
- Negligible – Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on the public health or safety.
- Minor – The effect would be detectable, but would not have an appreciable effect on public health and safety. If mitigation was needed, it would be relatively simple and would likely be successful.
- Moderate – The effects would be readily apparent, and would result in substantial, noticeable effects to public health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.
- Major – The effects would be readily apparent and would result in substantial, noticeable effects to public health and safety on a regional scale. Extensive mitigation measures would be needed, and their success would not be guaranteed.

3.2.3.3 Impacts of Alternative A, No Action

The current fire cache system is functional in the housing of firefighting engines and a shop, but not adequately sized for a 30-person fire cache and administrative support. With storage space insufficient, materials must be stored in overhead and other areas that are unsafe and inefficient. In responding to wildland fire situations, personnel are presently required to remove equipment from overhead storage, wait for co-workers to move out, and work in extremely cramped situations. These conditions affect response times, which translate to the protection of the resources and the public. Adequate space for personnel to work in is also important. Often, personnel must work out-of-doors to accomplish required administrative tasks. Over time, this would result in long-term, localized adverse effects of moderate intensity.

Cumulative effects. Park staff endeavor to provide a safe environment for visitors to Wind Cave National Park. Park response to wildland fire may increase the risks of traffic incidents. These actions pose negligible adverse effects to public health and safety.

Conclusion. The no action alternative would continue the storage of fire cache materials in unsafe situations. This would result in moderate, long-term, adverse effects on public health and safety.

The no action alternative would not produce major adverse impacts on public health and safety or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of public health or safety or values as a result of the implementation of the no action alternative.

3.2.3.4 Impacts of Alternative B (Preferred Alternative)

By constructing a fire cache structure, the unsafe storage of fire cache materials would be eliminated. Fire staff would have adequate space to respond to, prepare for, and deploy to wildland fire situations in a safe and effective manner. In addition, fire staff would have sufficient space to complete required administrative tasks. This would yield a long-term benefit to public health and safety of moderate intensity.

Cumulative effects. Park staff endeavor to provide a safe environment for visitors to Wind Cave National Park. The preferred alternative contributes beneficially to public health and safety by providing safe and efficient storage and workspace for personnel. This would produce a cumulative, long-term benefit of moderate intensity.

Conclusion. By constructing a fire cache, risk of employee injury due to unsafe storage is reduced. Providing adequate work space, employee productivity would increase. This would result in long-term benefits to public health and safety of moderate intensity.

The construction associated with installation of the fire cache may adversely affect traffic, but effects on public health and safety would be negligible and short-term.

The preferred alternative would not produce major adverse impacts on public health and safety or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of public health and safety or values as a result of the implementation of the preferred alternative.

3.2.4 Soils

3.2.4.1 Affected Environment

Soils in the park are generally silty to loamy types derived from the underlying gypsum red shales. Site-specific soil types are related to the geology, relief and vegetation present at the site (NPS 1994a). There are no prime or unique agricultural soils within the park. The project location is on the floor of Wind Cave Canyon. Soils in the canyon floor are deep and finely textured (NPS 1994a). The area of the project has had substantial disturbance in the past in construction of buildings and parking areas. The project site supports both native and non-native grasses, and there is little evidence that substantial erosive processes are acting within the site.

3.2.4.2 Evaluation Criteria

Direct, Indirect, and Cumulative Impacts (Methodology for Determining Impacts)

A variety of information sources have been used to determine impacts and significance for the affected soils. These consist primarily of published literature such as soil surveys (Ensz 1990), as well as research and staff observations. Actions affecting soils are also governed by various laws and policies listed in Section 8. Impacts of construction activities as well as subsequent

operations of facilities associated with the alternatives are discussed based on the erosion potential of the soil types present.

The following definitions apply to impact descriptions for the soils category:

Context: Geographic extent or scope of the impact

Duration:
- Short-term – Effect of each impact lasting a few days to a few weeks
- Intermediate – Lasting from a few months up to 5 years.
- Long-term – Lasting from a few years to decades.

Intensity:
- Negligible – No change in drainage capacity or moisture absorbency of existing soils, no erosion potential during or after construction, and no potential changes to groundwater quality or flow.
- Minor – Very limited soil disturbance (under 1 acre) having some possible short-term and localized effects related to increased erosion potential but no long-term changes in soil drainage capacity, moisture absorbency, or groundwater resources.
- Moderate – Disturbance of 1 acres or more of soil requiring an erosion control plan with mitigation, measurable long-term changes in soil drainage and moisture absorbency characteristics, and possible small-scale indirect impacts on groundwater resources.
- Major – Disturbance of 5 acres or more of soil requiring an erosion control plan with mitigation, measurable long-term changes in soil drainage and moisture absorbency characteristics, and direct or indirect impacts on local groundwater flow and/or quality.

3.2.4.3 Environmental Consequences, Alternative A, No Action

Soils at the existing fire building have been disturbed by construction of the maintenance buildings, parking areas, and the adjacent highway. The condition of the soil microbes and nutrient levels at this site are unknown. However, it is unlikely that the characteristics of productive local soils have been retained under these conditions.

The presence of parking areas adjacent to the building has resulted in approximately 0.5 acres of long-term disturbance and loss of productivity at this site. This has resulted in minor, long-term, localized adverse effects on the soil resources of the park.

Cumulative effects. The park has undertaken several infrastructure improvement projects including upgrading the water distribution and sewage collection systems, and upgrading the Visitor Center parking lot and stormwater treatment system. These actions are largely confined to previously disturbed sites, resulting in moderate, long-term adverse effects on soil resources of the park. The no action alternative would not contribute to adverse cumulative effects on soil resources.

Conclusion. Continued presence of the existing fire cache would result in approximately 0.1 acre of long-term loss of soil productivity. This would produce minor, localized, adverse effects on soil resources of the park.

The no action alternative would not produce major adverse impacts on soil resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for

enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of soil resources or values as a result of the implementation of the no action alternative.

3.2.4.4 Environmental Consequences, Alternative B (Preferred Alternative)

The preferred alternative would require excavation of a 25 by 35 foot area, approximately 5 feet deep for the construction of the building's foundation, and trenching for power and telephone lines. The area of the proposed structure has been heavily disturbed by construction of the parking area, and no *in situ* soil profiles would be expected. The preferred alternative would produce minor, long-term, adverse effects from construction of a concrete pad for the building foundation. Long-term effects would be adverse, localized, and of minor intensity.

Cumulative effects. As discussed for the no action alternative, other park plans have generated modest amounts of short-term soil disturbance within the park. The preferred alternative would have long-term, minor, adverse cumulative effects.

Conclusion. Under the preferred alternative, short-term adverse effects on soils result from disturbance and revegetation efforts. Because the project area has been previously excavated, effects on soils would be negligible. Over the long-term, localized beneficial effects of minor intensity would result from construction of a fire cache.

The preferred alternative would not produce major adverse impacts on soil resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of soil resources or values as a result of the implementation of the preferred alternative.

3.2.5 Vegetation

3.2.5.1 Affected Environment

The dominant vegetation types at Wind Cave National Park are the mixed-grass prairie, ponderosa pine stands, and riparian communities. Approximately 75 percent of the park is classified as a prairie ecosystem, dominated by blue grama, (*Bouteloua gracilis*), western wheatgrass (*Pascopyron smithii*), and little bluestem (*Schizachyrium scoparium*). This system also supports a variety of forbs and shrubs. Yucca (*Yucca glauca*), prairie clover (*Dalea aurea*), prickly pear (*Opuntia polycantha)*, black-eyed Susan (*Rudbekia hirta*), and cinquefoil (*Potentilla hippiana*) add color, fragrance, and variety to the vegetative community (NPS 2001c).

The remaining 25 percent of the park are woodlands. As elevation increases, ponderosa pine (*Pinus ponderosa*) communities appear on north-facing slopes. Other conifers include Rocky Mountain juniper (*Juniperus scopulorum*) and common juniper (*Juniperus communis*). Along streams and in canyon bottoms, deciduous trees, including green ash (*Fraxinus pennsylvanica*), boxelder (*Acer negundo*), bur oak (*Quercus macrocarpa*), plains cottonwood (*Populus deltoides*), American elm (*Ulmus americana*), and paper birch (*Betulae papyriferia*) are common.

More than 500 species of vascular plants have been recorded at Wind Cave National Park. Of the plants found in the park, more than 100 species are exotic, with three of these species currently classified as noxious weeds by the state of South Dakota, namely Canada thistle (*Cirisum arvense*), leafy spurge (*Euphorbia esula*), and field bindweed (*Convolvulus* arvensis). In addition, a number of exotic species have been introduced into the park including cheatgrass (*Bromus tectorum*), Kentucky bluegrass (*Poa pratense*), smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), yellow sweet clover (*Melilotus officinalis*), and white clover (*Melilotus lupulina*) and are most often found in disturbed areas. Most of the exotic species occur as small populations, and park staff have implemented a comprehensive weed management program to control their presence (Marriott 1999).

To reduce hazardous fuels and imitate the natural fire cycle, prescribed burns are regularly performed in the park. Approximately 2000 acres are burned each year. A general goal is for grasslands to be treated every six to seven years, and forested areas to be treated every 15 to 25 years. Manual fuels reduction is also performed to reduce the potential for catastrophic fire (NPS 1994b).

Vegetation at the proposed project site is dominated by the prairie ecosystem. The maintenance area is surrounded by native grasses and shrubs. Wind Cave Canyon also supports grasses, but has higher densities of shrubs and trees than the adjacent prairie. The vegetation surrounding the project site consists of a mix of native and non-native grasses. As the proposed site has been used for parking of vehicles, there is no vegetation growing on the site.

3.2.5.2 Evaluation Criteria

Direct, Indirect, and Cumulative Impacts (Methodology for Determining Impacts)

A variety of information sources have been used to determine impacts and significance for the affected vegetation resources. These consist primarily of published literature such as inventories and species research, expert opinion, as well as monitoring data and personal observations.

Actions affecting vegetation are also governed by laws and policies listed in Section 8. The basis for analysis was the amount of direct disturbance to terrestrial and aquatic vegetation present at the sites. Impacts on any State or Federal rare, threatened, or endangered plants were also assessed.

The following definitions apply to impact descriptions for the vegetation category:

Context: Geographic extent or scope of the impact.

Duration:

Short-term – Effect of each impact lasting a few days to weeks.
Intermediate – Lasting from a few weeks to months.
Long-term – Lasting from a few months to years.

Intensity:

Negligible – No native terrestrial plant communities and/or aquatic plant communities would be disturbed; and there would be no direct or indirect impacts on native vegetation, including federally listed species.

Minor – Disturbance of regionally typical native terrestrial plant communities and/or aquatic plant communities would be limited to less than 1 acre for terrestrial communities. There would be no impact on federally listed plant species.
Moderate – Disturbance of regionally typical native terrestrial plant communities and/or aquatic plant communities would occur. The area of disturbance would be from 1 to 5 acres of terrestrial habitat. There could be indirect impacts to federally listed plant species.
Major – Disturbance of more than 5 acres of regionally typical terrestrial plant community or any acreage of critical habitat for federally listed plant species.

3.2.5.3 Environmental Consequences, Alternative A, No Action

Continuing current management would not require disturbance of vegetation. The no action alternative would have minor, long-term adverse effect on vegetative communities of the park.

Cumulative Impacts. The park controls weeds under its exotic vegetation management program and controls fuels under its fire management plan. The park also endeavors to prevent development on undisturbed lands. This alternative would involve no disturbance or new construction and would perpetuate current conditions. With this, the no action alternative would produce a long-term, minor, adverse contribution to effects of other park plans and projects on vegetative communities. The impacts of this alternative, in combination with other past, present and reasonably foreseeable future actions, would have long-term, minor adverse cumulative effects.

Conclusion, Under the no action alternative, no disturbance would occur, and there would be long-term, minor adverse effects to vegetative communities within the park.

The no action alternative would not produce major adverse impacts on vegetative resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of vegetative resources or values as a result of the implementation of the no action alternative.

3.2.5.4 Environmental Consequences, Alternative B (Preferred Alternative)

The preferred alternative includes excavation of a foundation (cement pad) and the installation of underground utilities for electricity, telephone, and computer capabilities. Construction activities would be within the existing disturbance area of the parking area of the current fire cache and involve the removal of no vegetation. Utility installation would be from the new structure to the old structure, a distance of approximately 20 feet.

These activities would provide minor, long-term adverse effects on native vegetative communities.

Cumulative effects. As discussed for the no action alternative, the park maintains exotic vegetation and fire management programs. In combination with these and other efforts, the disturbance associated with the preferred alternative would contribute to minor adverse effects on vegetative communities.

Conclusion. Construction of a new fire cache structure would result in minor, long-term, adverse effects on vegetative communities.

The preferred alternative would not produce major adverse impacts on vegetation resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. Consequently, there would be no impairment of vegetation resources as a result of the implementation of the preferred alternative.

3.2.6 Visitor Use and Experience

3.2.6.1 Affected Environment

This project will have a short-term affect on visitors traveling on Highway 385 within the park. The project is planned for the summer-fall months when visitation is at its height. The project would occur between the present fire cache and Highway 385, opposite the sewage treatment lagoons. The project will last for approximately 4 weeks. The area, although not closed to the public, is not a public area, but can be seen from Highway 385.

3.2.6.2 Evaluation Criteria

Direct, Indirect, and Cumulative Impacts (Methodology for Determining Impacts)

A variety of information sources have been used to determine impacts and significance for Visitor Use and Experience. These consist primarily of planning and management documents, as well as monitoring data and personal observations. Actions affecting visitor use and experience are also governed by various laws and policies listed in Section 8.

The following definitions apply to impact descriptions for the Visitor use and Experience category:

Context: Geographic extent or scope of the impact

Duration:
- Short-term – Effect of each impact lasting a day or less
- Intermediate – Lasting from a few days to a few months
- Long-term – Lasting a year or more.

Intensity:
- Negligible – The impact is zero or at the lowest levels of detection
- Minor – The impact is slight, but detectable.
- Moderate – The impact is readily apparent.
- Major – The impact is severely adverse or exceptionally beneficial.

3.2.6.3 Environmental Consequences, Alternative A, No Action

Direct and Indirect Impacts. Existing conditions would continue under the no action alternative. If unresolved, the conditions created by cramped facilities and unsafe storage activities would persist. These conditions are likely to be aggravated by future equipment

needs. As storage and workspace become more constrictive, personnel will be forced to work in the public eye on a consistent basis. This would be a long-term, moderate, site specific negative impact

Cumulative Impacts. The park has recently completed or is planning several projects to ensure that visitors are adequately served and that resources receive long-term resource protection. The cumulative impacts of this alternative, in combination with other past, present and reasonably foreseeable future actions, would be negative, long term and of moderate intensity.

Conclusion. Impacts of the no action alternative on Visitor Use and Experience are expected to be negative impact of site specific, long-term, and of moderate intensity.

3.2.6.4 Environmental Consequences, Alternative B (Preferred Alternative)

Direct and Indirect Impacts. Constructing a fire cache, would constitute an addition to the cultural and historic fabric of the area. The structure would be designed to mimic the sandstone CCC buildings of the maintenance area. This area of construction will be closed to visitor use for the duration of the project, which is estimated to be 4 weeks, however this is not an area of general park visitation. The construction area will be visible to the public from Highway 385. All construction material will be stored within the current footpad of the parking area. The work will be accomplished during 5 ten-hour days a week. Construction noise may be heard from Highway 385 and at the Visitor Center during the day. This addition to the visual landscape would likely result in site specific impacts of negative, long term and minor intensity to visitor use and experience.

Cumulative Impacts. As outlined in the no action alternative, other projects the park has or is planning would contribute to cumulative impacts of this alternative, would likely result in site specific impacts of negative, long term and minor intensity to visitor use and experience.

Conclusion. Construction of a new fire cache structure would result in efficient and safe storage of fire equipment, easier and more rapid response, quicker protection of resources and thus a more appealing environment for visitors. Impacts to Visitor Use and Experience are expected to be site specific, long-term, and of minor intensity.

4. Sustainability and Long-term Management

Sustainability is the result achieved by doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. The NPS Guiding Principles of Sustainable Design (NPS 1994c) directs NPS management philosophy. It provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook articulates principles to be used in the design and management of visitor facilities that emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings.

The park's existing fire cache building is not adequate for current wildland firefighting requirements. Lack of sufficient space requires the storage of equipment and materials in conditions that are unsafe for employees and creates undue wear and tear on equipment. The no action alternative fails to support NPS policies regarding sustainable management of park equipment and facilities. The lack of adequate space also creates an unacceptable work environment.

The preferred alternative, as analyzed in this environmental assessment presents a range of solutions to the park's fire cache and fire administrative needs. This alternative will provide for safe storage of fire cache material and work space for fire personnel. It also provides environmental benefits when compared to the no action alternative and would produce the most sustainable, long-term option for fire management.

The preferred alternative utilizes the existing fire cache building for engine storage and workshop area, reduces the need for change to the historic structure to meet current needs, and produces no long-term disturbance inside Wind Cave National Park. For these reasons, implementation of the preferred alternative would conform to NPS policy mandating protection of resources into perpetuity.

5. REFERENCES

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Long, Barbara Beving. 1992. Wind Cave National Park Historic Contexts and National Register Guidelines. Done for the National Park Service by Barbara B. Long under contract. Cresco, Iowa: Four Mile Research Company.

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___1994c. Guiding Principles of Sustainable Design. National Park Service. December 15, 1994.

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Personal Communications

Communications with Wind Cave National Park staff include conversations, telephone communication, and electronic mail exchanges over the period of January 2003 through May 2003.

U.S. Fish and Wildlife Service. 2003. Larson, Scott. South Dakota Field Office, Pierre SD. Telephone conversation on December 2, 2003, resulted in concurrence of no effect to special status species or designated critical habitats.

6. PREPARERS

Dan Foster, Chief of Resource Management, Wind Cave National Park

Sabrina Henry, Assistant Fire Crew Leader, Wind Cave National Park

Kevin Merrill, Fire Crew Leader, Wind Cave National Park

INDIVIDUALS CONSULTED

Marie Curtin, Biological Science Technician, Wind Cave National Park

Tom Farrell, Chief of Interpretation, Wind Cave National Park

Rod Horrocks, Physical Science Specialist, Wind Cave National Park

Rick Mossman, Chief Ranger, Wind Cave National Park

Barbara Muenchau, Biological Science Technician, Wind Cave National Park

Dan Roddy, Resource Management Specialist, Wind Cave National Park

Steve Schrempp, Facility Manager, Wind Cave National Park

Linda Stoll, Superintendent, Wind Cave National Park

Denny Ziemann, Former Chief Ranger, Wind Cave National Park

7. CONSULTATION AND COORDINATION

Agencies/Tribes/Organizations/Individuals Contacted

Tribes. Several Native American tribes have demonstrated interest in the areas within Wind Cave National Park. Letters were sent to 19 tribes and tribal contacts regarding this project in November 2003. The list of recipients and a copy of the letter sent to the tribal representatives can be found in section 7 of this document.

State Historic Preservation Office. The park contacted the South Dakota Historic Preservation Officer (SHPO) by phone on March 15 and 25, 2004, regarding the construction of a new fire cache.

U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service was contacted by telephone regarding this project on December 2, 2003. The Service agreed with the park's finding of no effect on endangered and threatened species.

8. DISTRIBUTION OF ENVIRONMENTAL ASSESSMENT DOCUMENT

This EA is being made available to the public and other agencies in a number of ways:

The public and others may request a copy by contacting the superintendent's office, or by entering the park website at www.nps.gov/wica.

Copies of the EA have been mailed to the following agencies and organizations:

Federal Agencies and Government

Advisory Council on Historic Preservation

Dept. of Agriculture

U.S. Forest Service

Dept. of the Interior

National Park Service

Badlands National Park

Jewel Cave National Monument

Mt. Rushmore National Memorial

U.S. Fish and Wildlife Service

U.S. Environmental Protection Agency Region VIII

U.S. Congressional Representatives from South Dakota

State and Local Agencies and Governments

Custer County Commissioners

Custer Volunteer Fire Department

Pringle Volunteer Fire Department

South Dakota State Historic Preservation Officer

Tribal Historic Preservation Officer(s)

Indian Tribes

Arapaho Business Council

Cheyenne River Sioux Tribe

Cheyenne-Arapaho Tribes of Oklahoma

Crow Creek Sioux Tribe

Crow Tribe

Flandreau Santee Sioux Tribe

Fort Belknap Community Council

Fort Peck Tribal Executive Board

Lower Brule Sioux Tribe

Northern Cheyenne Tribe

Oglala Lakota Nation

Rosebud Sioux Tribe

Santee Sioux Tribe

Shoshone Business Council

Sisseton-Wahpeton Sioux Tribe

Spirit Lake Sioux Tribe

Standing Rock Sioux Tribe

Three Affiliated Tribes

Yankton Sioux Tribe

Private Agencies

Black Hills Power, Inc

Golden West Companies

9. COMPLIANCE WITH FEDERAL AND STATE LAWS AND REGULATIONS

The following laws and associated regulations provided direction for the design of project alternatives and the analysis of impacts.

32 Stat. 765-766, 16 USC 141-146. The Act of January 9, 1903.

The enabling Act establishing Wind Cave National Park.

The Act of August 10, 1912.

Establishment of Wind Cave National Game Preserve.

49 Stat. 383, USC 141b.

Section 601 of Public Law 148, June 15, 1935, abolishing Wind Cave National Game Preserve and incorporating all properties therein to Wind Cave National Park.

National Park Service Organic Act (16 USC 1 et seq. [1988], Aug. 25, 1916)

The 1916 National Park Service Organic Act is the core of park service authority and the definitive statement of the purposes of the parks and of the National Park Service mission.

National Environmental Policy Act of 1969 (42 USC 4321-4370).

The purposes of NEPA include encouraging "harmony between [humans] and their environment and promote efforts which will prevent or eliminate damage to the environment…and stimulate the health and welfare of [humanity]." The purposes of NEPA are accomplished by evaluating the effects of federal actions. The results of these evaluations are presented to the public, federal agencies, and public officials in document format (e.g., environmental assessments and environmental impact statements) for consideration prior to taking official action or making official decisions. Implementing regulations for NEPA are contained in 40 CFR 1500-1515. This document is prepared to comply with NEPA.

Clean Water Act (33 USC 1251-1376).

The Clean Water Act, passed in 1972 as amendments of the Federal Water Pollution Control Act, and significantly amended in 1977 and 1987, was designed to restore and maintain the integrity of the nation's water.

Clean Air Act (PL Chapter 360,69 Stat 322, 42 USC 7401 et seq.).

The main purpose of this act is to protect and enhance the nation's air quality to promote the public health and welfare. The act establishes specific programs that provided special protection for air resources and air quality related values associated with NPS units. The EPA has been charged with implementing this act. No measurable impacts of the alternatives on air quality are expected, and no additional compliance activities are anticipated relative to the Clean Air Act.

Endangered Species Act of 1973, as amended (ESA) (16 USC 1531-1544).

The purposes of the ESA include providing "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." According to the ESA, "all federal departments and agencies shall seek to conserve endangered species and threatened species" and "[e}ach federal agency shall…insure that any action authorized, funded or carried out by such agency…is not likely to jeopardize the continued existence of any endangered species or threatened species." The USFWS (non-marine species) and the National Marine Fisheries Service (NMFS) (marine species, including anadromous fish and marine mammals) administer the ESA. The effects of any agency action that may affect endangered, threatened, or proposed species must be evaluated in consultation with either the USFWS or NMFS, as appropriate. Implementing regulations which describe procedures for interagency cooperation to determine the effects of actions on endangered, threatened, or proposed species are contained in 50 CFR 402. The NPS has consulted with the USFWS in compliance with Section 7 of the ESA. No threatened and endangered or sensitive species occur in the project area.

National Historic Preservation act of 1966, as amended (USC 470 et seq.).

Congressional policy set forth in NHPA includes preserving "the historical and cultural foundations of the Nation" and preserving irreplaceable examples important to our national heritage to maintain "cultural, educational, aesthetic, inspirational, economic, and energy benefits," NHPA also established the National Register of Historic Places composed of" districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture." NHPA requires the federal agencies take into account the effects of their actions on properties eligible for or included in the National Resister of 31 Historic Places and to coordinate such actions with the State Historic Preservation Offices (SHPO). NHPA also requires federal agencies, in consultation with the SHPO, to locate, inventory, and nominate all properties that appear to qualify for the National Register of Historic Places, including National Historic Landmarks. Further, it requires federal agencies to document those properties (in the case of an adverse effect) and propose alternatives to those action in accordance with NEPA.

Executive Order 12898, Environmental Justice in Minority and Low-Income Populations.

The executive order directs federal agencies to assess whether their actions have disproportionately high and adverse human health or environmental effects on minority and low-income populations. This topic was dismissed in this EA; therefore no additional compliance activities are anticipated under this Executive Order.

Appendix A. Letters and Other Coordination Documentation

United States Department of the Interior

NATIONAL PARK SERVICE
WIND CAVE NATIONAL PARK
RR1, BOX 190
HOT SPRINGS, SOUTH DAKOTA 57747

IN REPLY REFER TO:

H4217 (WICA
November 05, 2003

Ms. Madonna Archambeau, Chairperson
Yankton Sioux Tribal & Claims Committee
P. O. Box 248
Marty, SD 57361

Subject: Section 106 Consultation, Construction of Fire Cache Facility, Wind Cave National Park

Dear Ms. Archambeau:

The purpose of this letter is to provide you advance notice that the National Park Service is beginning to plan for construction of a fire cache facility at Wind Cave National Park. The primary purpose of the project is to construct a 700 square foot facility to provide office/work space for a seven person wildland fire suppression module, provide space for a 30 person fire cache and storage of All Terrain Vehicles (ATV's).

Current alternatives being considered include:

Alternative A, the NPS would construct a 700 square foot (20' x 30') facility to house the fire cache and provide administrative work space for fire personnel. Less than 0.1 acres adjacent to the existing structure would be disturbed. The new facility would be constructed in a manner to match the appearance of the existing structures to maintain a uniformity of design and style.

Alternative B would be no action by the NPS to construct a new structure. The fire cache, equipment storage, and personnel work space would remain in the current structure.

These are the alternatives we have identified to date.

We extend an invitation to you to attend a scoping meeting for this project, scheduled for December 02, 2003 at 1:00 pm at the Wind Cave National Park headquarters building. This meeting will be to evaluate the current alternatives and/or identify other alternatives that may surface.

The park is aware that American Indians value Wind Cave itself as a very special place, so we want to be sure that the project will not affect it or other ethnographic resources valued by your tribe. Therefore, this letter is to formally initiate Government-to-Government consultation with your office in accordance with legislation, Executive Orders, regulations, and policy, including sections 101 and 106 of the National Historic Preservation Act of 1966 as amended, 36 CFR 800, National Park Service *Management Policies* and Director's Order 28, *Cultural Resources Management* (especially Chapter 10, Ethnographic Resources).

We have begun planning work required by Section 106 of the National Historic Preservation Act, and we have begun work on an environmental assessment that will study and assess the impacts to these features and determine any required mitigation. We believe that your participation will result in better planning for cultural resources management, and will help ensure that cultural resources valued by your tribe are adequately considered during the planning and design process and in preparation of the accompanying environmental assessment. We look forward to receiving your input on our plans and any concerns you have about the project. We would be pleased to discuss this project further, either by telephone or at the scoping meeting.

If you have any questions, please contact me. I can be reached at (605) 745-4600.

Sincerely,

/S/ Linda L. Stoll

Linda L. Stoll
Superintendent

Ms. Madonna Archambeau, Chairperson
Yankton Sioux Tribal & Claims Committee
P. O. Box 248
Marty, SD 57361

Mr. Duane Big Eagle, Chairman
Crow Creek Sioux Tribal Council
P. O. Box 50
Fort Thompson, SD 57339

Mr. James Crawford, Chairman
Sisseton-Wahpeton Sioux Tribal Council
P. O. Box 509
Agency Village, SD 57262

Mr. Harold Frazier, Chairman
Cheyenne River Sioux Tribe
P. O. Box 590
Eagle Butte, SD 57625

Mr. Tex Hall, Chairman
Three Affiliated Tribes Business Council
HC 3, Box 2
New Town, ND 58763

Mr. John Morales, Jr., Chairman
Fort Peck Tribal Executive Board
P. O. Box 1027
Poplar, MT 59255

Mr. Vernon Hill, Chairman
Shoshone Business Committee
P. O. Box 217
Fort Washakie, WY 82514

Mr. Burton Hutchinson Sr, Chairman
Arapaho Business Committee
P. O. Box 396
Fort Washakie, WY 82514

Mr. Michael Jandreau, Chairman
Lower Brule Sioux Tribal Council
P. O. Box 187
Lower Brule, SD 57548

Mr. Charles Colombe, President
Rosebud Sioux Tribal Council
P. O. Box 430
Rosebud, SD 57570

Mr. Tim Mentz, Historic Preservation Officer
Standing Rock Sioux Tribe
P. O. Box D
Fort Yates, ND 58538

Mr. Charles W. Murphy, Chairman
Standing Rock Sioux Tribal Council
P. O. Box D
Fort Yates, ND 58538

Mr. Jim Picotte, Historic Preservation Officer
Cheyenne River Sioux Tribe
P. O. Box 590
Eagle Butte, SD 57625

Mr. Thomas Ranfranz, President
Flandreau Santee Sioux Executive Committee
P. O. Box 283
Flandreau, SD 57028

Ms. Geri Small, President
Northern Cheyenne Tribal Council
P. O. Box 128
Lame Deer, MT 59043

Mr. Ben Speak Thunder, Chairman
Fort Belknap Community Council
RR1, Box 66
Harlem, MT 59526

Mr. Robert Tabor, Chairman
Cheyenne-Arapaho Tribes of Oklahoma
P. O. Box 38
Concho, OK 73022

Mr. Roger Trudell, Chairman
Santee Sioux Tribal Council
425 Frazier Ave. N #2
Niobrara, NE 68760-7219

Mr. Carl Venne, Chairman
Crow Tribal Council
P. O. Box 400
Crow Agency, MT 59022

Mr. Valentino White, Chairman
Spirit Lake Tribal Council
P. O. Box 359
Fort Totten, ND 58335

Mr. John Yellow Bird Steele, President
Oglala Sioux Tribal Council
P. O. Box H
Pine Ridge, SD 57770

United States Department of the Interior

NATIONAL PARK SERVICE
WIND CAVE NATIONAL PARK
RR1, BOX 190
HOT SPRINGS, SOUTH DAKOTA 57747

IN REPLY REFER TO:

H4217 (WICA
November 05, 2003

Mr. Jay D. Vogt, SHPO
State Historic Preservation Office
Attn: Section 106 Review and Compliance Coordinator
Cultural Heritage Center
900 Governors Drive
Pierre, South Dakota 57501

Subject: Section 106 Consultation, Construction of Fire Cache Facility, Wind Cave National Park

Dear Mr. Vogt:

The purpose of this letter is to provide you advance notice that the National Park Service is beginning to plan for construction of a fire cache facility at Wind Cave National Park. The primary purpose of the project is to construct a 700 square foot facility to provide office/work space for a seven person wildland fire suppression module, provide space for a 30 person fire cache and storage of All Terrain Vehicles (ATV's).

Current alternatives being considered include:

Alternative A, the NPS would construct a 700 square foot (20' x 30') facility to house the fire cache and provide administrative work space for fire personnel. Less than 0.1 acres adjacent to the existing structure would be disturbed. The new facility would be constructed in a manner to match the appearance of the existing structures to maintain a uniformity of design and style.

Alternative B would be no action by the NPS to construct a new structure. The fire cache, equipment storage, and personnel work space would remain in the current structure.

These are the alternatives we have identified to date.

We extend an invitation to you to attend a scoping meeting for this project, scheduled for December 02, 2003 at 1:00 pm at the Wind Cave National Park headquarters building. This meeting will be to evaluate the current alternatives and/or identify other alternatives that may surface

This project lies within the Wind Cave National Park Administrative and Utility Area Historic District, an area that contains 17 structures considered eligible for the National Register of Historic Places.

In addition, the park is aware that American Indians value Wind Cave itself as a very special place, so letters initiating Government-to-Government consultation have been sent to tribes who have expressed an interest in the park, and, as applicable, Tribal Historic Preservation Officers.

We don’t expect any of the existing historic structures to be directly impacted by this project, but the alternatives under consideration will require construction of new a building in the vicinity of existing historic structures in the maintenance area adjacent to highway US385. We have begun drafting an environmental assessment that will study and assess the impacts to these features and determine required mitigation. We look forward to receiving your input in the planning process and any concerns you may have now regarding this project. The environmental assessment will be ready for review in early March.

We believe that your participation will result in better planning for cultural resources management, and will help ensure that cultural resources are adequately considered during the preparation of the plan and accompanying environmental assessment. Should you have any questions or desire additional information, please contact Tom Farrell, our Section 106 Compliance Coordinator at (605) 745-4600.

Sincerely,

/S/ Linda L. Stoll

Linda L. Stoll
Superintendent

United States Department of the Interior

NATIONAL PARK SERVICE
WIND CAVE NATIONAL PARK
RR1, BOX 190
HOT SPRINGS, SOUTH DAKOTA 57747

IN REPLY REFER TO:

H4217 (WICA
November 05, 2003

Mr. Bob Whitney - Chief
Pringle Volunteer Fire Department
P.O. Box 97
Pringle, SD 57773

Subject: Section 106 Consultation, Construction of Fire Cache Facility, Wind Cave National Park

Dear Mr.Whitney:

The purpose of this letter is to provide you advance notice that the National Park Service is beginning to plan for construction of a fire cache facility at Wind Cave National Park. The primary purpose of the project is to construct a 700 square foot facility to provide office/work space for a seven person wildland fire suppression module, provide space for a 30 person fire cache and storage of All Terrain Vehicles (ATV's).

Current alternatives being considered include:

Alternative A, the NPS would construct a 700 square foot (20' x 30') facility to house the fire cache and provide administrative work space for fire personnel. Less than 0.1 acres adjacent to the existing structure would be disturbed. The new facility would be constructed in a manner to match the appearance of the existing structures to maintain a uniformity of design and style.

Alternative B would be no action by the NPS to construct a new structure. The fire cache, equipment storage, and personnel work space would remain in the current structure.

These are the alternatives we have identified to date.

We extend an invitation to you to attend a scoping meeting for this project, scheduled for December 02, 2003 at 1:00 pm at the Wind Cave National Park headquarters building. This meeting will be to evaluate the current alternatives and/or identify other alternatives that may surface.

We look forward to receiving your input on our plans and any concerns you have about the project. We would be pleased to discuss this project further, either by telephone or at the scoping meeting.

If you have any questions, please contact me. I can be reached at (605) 745-4600.

Sincerely,

/S/ Linda L. Stoll

Linda L. Stoll
Superintendent

Mr. Bob Whitney
Pringle VFD
P.O. Box 97
Pringle, SD 57773

Mr. Rollie Noem
Director Custer State Park
HCR 83, Box70
Custer, SD 57747

Mr. Ned Westphal
Argyle VFD
P.O. Box 231
Custer, SD 57730

Mr. Hap Schroth
Buffalo Gap VFD
P.O. Box 97
Buffalo Gap, SD 57722

Mr. Mark Lamphere
Cascade VFD
HC 52 Box 160
Hot Springs, SD 57747

Mr. Joe Harbach
Custer VFD
616 Crook St.
Custer, SD 57730

Mr. Brian Daunte
Highlands VFD
HCR 59 Box 63
Edgemont, SD 57735

Hot Springs Fire Dept
102 North Garden
Hot Springs, SD 57747

Mr. Richard Ball
Minnekahta VFD
P.O. Box 211
Hot Springs, SD 57747

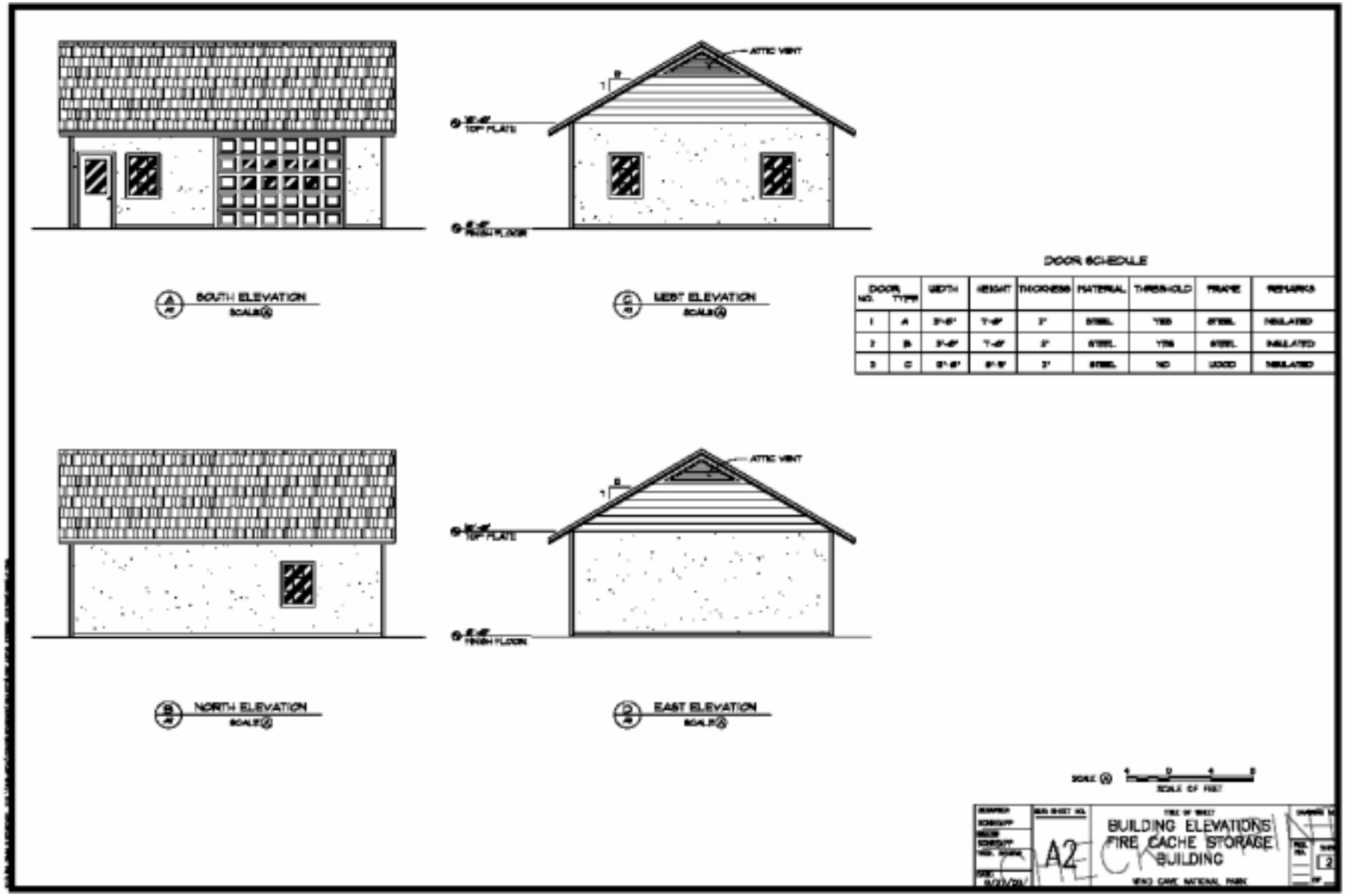
Appendix B. Summary of Resource Impact and Evaluation

Resource	Impact Category	Definition of Impact	Alternative A No Action	Alternative B Preferred Alternative
Cave Resources	Context	Geographic extent or scope of the impact.	**Localized**	**Localized**
	Duration	Caves within National Park Areas are managed as non-renewable resources. All effects to cave resources are considered to be long-term and irreversible.	**Long Term**	**Long Term**
	Intensity	Negligible - No changes would occur or changes in cave formations and biota would be below or at the level of detection, and if detected, would have effects that would be considered slight.		**X**
		Minor - Changes in cave formations and biota may be measurable, although the changes would be minimal, and the effects would be localized. No cave resource protection measures would be necessary.		
		Moderate - Changes in cave formations and biota would be measurable. Formations would be affected by deterioration, altered chemical composition, or changed depositional patterns. The effects would be localized. Cave resource protection measures would be necessary and the measures would likely be successful.	**X**	
		Major - Changes in cave formations and biota would be measurable, would have substantial consequences, and be noticed throughout the cave system. Cave resource protection measures would be necessary and the success of the measures could not be guaranteed.		
Cultural Resources	Context	Geographic extent or scope of the impact.	**Localized**	**Localized**
	Duration	Short-term – Effects on the natural elements of a cultural landscape may be comparatively short-term (e.g., three to five years until new vegetation grows or historic plantings are restored, etc.)		
		Long-term – Because most cultural resources are non-renewable, any effects on archaeological, historic, or ethnographic resources, and on most elements of a cultural landscape would be long-term.	**X**	**X**
	Intensity	Negligible – The impact is at the lowest levels of detection – barely perceptible and not measurable.	**X**	
		Minor – For archeological resources, the impact affects an archeological site(s) with modest data potential and no significant ties to a living community's cultural identity. The impact does not affect the character defining features of a National Register of Historic Places eligible or listed structure, district, or cultural landscape.		**X**
		Moderate – For archeological resources, the impact affects an archeological site(s) with high data potential and no significant ties to a living community's cultural identity. For a National Register eligible or listed structure, district, or cultural landscape, the impact changes a character defining feature(s) of the resource but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.		
		Major – For archeological resources, the impact affects an archeological site(s) with exceptional data potential or that has significant ties to a living community's cultural identity. For a National Register eligible or listed structure, district, or cultural landscape, the impact changes a character defining feature(s) of the resource, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register.		

Resource	Impact Category	Definition of Impact	Alternative A No Action	Alternative B Preferred Alternative
Public Health and Safety	Context	Geographic extent or scope of the impact	**Localized**	**Localized**
	Duration	Short-term – Effects lasting for the duration of the treatment action		
		Long-term – Effects lasting longer than the duration of the treatment action	**X**	**X**
	Intensity	Negligible – Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on the public health or safety.		
		Minor – The effect would be detectable, but would not have an appreciable effect on public health and safety. If mitigation was needed, it would be relatively simple and would likely be successful.	**X**	
		Moderate – The effects would be readily apparent, and would result in substantial, noticeable effects to public health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.		**X Beneficial Effects**
		Major – The effects would be readily apparent and would result in substantial, noticeable effects to public health and safety on a regional scale. Extensive mitigation measures would be needed, and their success would not be guaranteed.		
Soils	Context	Geographic extent or scope of the impact	**Localized**	**Localized**
	Duration	Short-term – Effect of each impact lasting a few days to a few weeks		
		Intermediate – Lasting from a few months up to 5 years.		
		Long-term – Lasting from a few years to decades.	**X**	**X**
	Intensity	Negligible – No change in drainage capacity or moisture absorbency of existing soils, no erosion potential during or after construction, and no potential changes to groundwater quality or flow.		
		Minor – Very limited soil disturbance (under 5 acres) having some possible short-term and localized effects related to increased erosion potential but no long-term changes in soil drainage capacity, moisture absorbency, or groundwater resources.	**X**	**X**
		Moderate – Disturbance of 5 acres or more of soil requiring an erosion control plan with mitigation, measurable long-term changes in soil drainage and moisture absorbency characteristics, and possible small-scale indirect impacts on groundwater resources.		
		Major – Disturbance of 5 acres or more of soil requiring an erosion control plan with mitigation, measurable long-term changes in soil drainage and moisture absorbency characteristics, and direct or indirect impacts on local groundwater flow and/or quality.		

Resource	Impact Category	Definition of Impact	Alternative A No Action	Alternative B Preferred Alternative
Sustainability and Long-term Management	Context	Geographic extent or scope of the impact.	**Localized**	**Localized**
	Duration	Long-term – Lasting from a few months to years.	**X**	**X**
	Intensity	Moderate – The impact is readily apparent.	**X**	**X**
Vegetation	Context	Geographic extent or scope of the impact.	**Localized**	**Localized**
	Duration	Short-term – Effect of each impact lasting a few days to weeks.		
		Intermediate – Lasting from a few weeks to months.		
		Long-term – Lasting from a few months to years.	**X**	**X**
	Intensity	Negligible – No native terrestrial plant communities and/or aquatic plant communities would be disturbed; and there would be no direct or indirect impacts on native vegetation, including federally listed species.		
		Minor – Disturbance of regionally typical native terrestrial plant communities and/or aquatic plant communities would be limited to under 1 acre for terrestrial communities. There would be no impact on federally listed plant species.	**X**	**X**
		Moderate – Disturbance of regionally typical native terrestrial plant communities and/or aquatic plant communities would occur. The area of disturbance would be from 1 to 5 acres of terrestrial habitat. There could be indirect impacts to federally listed plant species.		
		Major – Disturbance of more than 5 acres of regionally typical terrestrial plant community or any acreage of critical habitat for federally listed plant species.		
Visitor Use and Experience	Context	Geographic extent or scope of the impact.	**Localized**	**Localized**
	Duration	Short-term – Effect of each impact lasting a day or less		
		Intermediate – Lasting from a few days to a few months		
		Long-term – Lasting a year or more.	**X**	**X**
	Intensity	Negligible – The impact is zero or at the lowest levels of detection		
		Minor – The impact is slight, but detectable.		**X**
		Moderate – The impact is readily apparent.	**X**	
		Major – The impact is severely adverse or exceptionally beneficial.		

Appendix C. Elevation Drawing of Proposed Fire Cache Structure



Appendix D. Photographs of Project Ground Disturbance Area


Proposed Fire Cache Structure Site
(Approximate area of disturbance is within outlined box.)

NATIONAL PARK SERVICE
U.S. Department of the Interior

Environmental Assessment
May 2004

Project to Construct a New Fire Cache

Wind Cave National Park
South Dakota